In The Claims:

Cancel claims 1-14 and 17-35, and add new claims 36-40, as follows:

Claim 36 (new)

36. A method for the identification of unknown particles contained in a fluid comprising:

a) providing a source of radiation and at least one detection means to detect said radiation located in a predetermined position relative to the radiation source, and positioned to investigate a fluid;

b) interrogating said fluid with said source of radiation;

c) measuring the radiation scattered by an unknown particle in the fluid at said at least one detection means;

d) comparing the results obtained in step (c) with standard results previously obtained from a previously identified particle, wherein said standard results are obtained by generating a radiation scattering pattern capable of uniquely identifying said previously identified article by subjecting measurements of the radiation scattered by said previously identified particle in a fluid to an algorithm which enhances the separation of data generated from said measurements from data generated from measurements of distinct particles, and to a mathematical technique that eliminates data generated from a selected, previously identified particle unless the selected, previously identified particle is of the same type as the N particles whose generated data is most similar to the selected, previously identified particle's data, where N is a whole number greater than 0.

e) identifying said unknown particle based upon the comparison of step (d).

Claim 37 (new)

37. Apparatus for the identification of unknown particles contained in a fluid to be analyzed which includes a source of radiation for generating a radiation beam and at least one detection means having a plurality of separate detectors to detect said

radiation located in a predetermined position relative to the radiation source, such that a particle intersecting the radiation beam will scatter radiation detectable by the detectors, and means for measuring the radiation scattered by an unknown particle in the fluid by said detection means, the improvement comprising means for comparing the results obtained by said measurement step with standard results previously obtained from a previously identified particle, wherein said standard results are obtained by generating a radiation scattering pattern capable of uniquely identifying said previously identified particle by subjecting measurements of the radiation scattered by said previously identified particle in a fluid to an algorithm which enhances the separation of data generated from said measurements from data generated from measurements of distinct particles, by further subjecting the data obtained from said algorithm to a mathematical technique that further enhances the separation of data generated from said measurements from data generated from said measurements of distinct particles, wherein said mathematical technique eliminates the data generated from a selected, previously identified particle unless the selected, previously identified article is of the same type as the N particles whose generated data is most similar to the selected, previously identified particle's data, where N is a whole number greater than 0, and identifying said unknown particle based upon the comparison step.

Claim 38 (new)

38. A method for identifying unknown particles that are present in a fluid, which includes interrogating particles by directing a light beam (104) through the fluid while flowing the fluid past the beam and detecting scattered light by a plurality of detectors (112) as a result of an event, which is when a particle passes through a detection zone (114) that lies along said beam, and recording the outputs of said detectors for an event to produce an eventvector for an unknown particle, which includes comparing the eventvector for the unknown particle to data for a particle that is known to be of a first species in an attempt to determine whether the unknown particle

is of said known first species of particles, characterized by:

said step of flowing the fluid includes flowing the fluid through locations along said light beam that are not in said detection zone, so light is scattered by particles passing through locations along said beam that are not in said detect zone;

said step of detecting scattered light by a plurality of detectors, includes detecting, by each of said detectors, only light that is received within an angle that is no more than about 2.5° to detect only light that is scattered from said detect zone but not light that is scattered from locations along said light beam that are outside said detect zone.

Claim 39 (new)

39. The method described in claim 38 wherein:

said step of producing multiple events for particles of said known first species includes placing multiple particles of said first species in a first quantity of fluid that is originally substantially devoid of particles that would produce an eventvector, and conducting said step of producing multiple eventvectors for the particles of said known first species; and including

producing multiple events for particles that are of a known second species, to produce multiple eventvectors for that known second species;

performing a comparison of the multiple eventvectors for said known first species and the multiple eventvectors for said known second species by an algorithm that groups the eventvectors of said first and second known species to produce first and second groups of eventvectors with maximum separation of said groups while producing minimum separation of eventvectors of the same group;

said step of comparing includes comparing the eventvector of said unknown particle to the eventvectors of said first and second groups of eventvectors to determine whether said eventvector of said unknown particle lies in one of said groups of eventvectors.

Claim 40 (new)

40. Apparatus for detecting particles that are present in fluid, which includes means (102) for generating a light beam (104) and a plurality of detectors (112) that each detects light scattered from a detection zone (114) lying along the beam when a particle enters the detection zone, characterized by:

said detectors are each constructed to detect light scattered from said detection zone but not from locations along said beam that are outside said detect zone, each detector being constructed to detect light only within a narrow angle that is no more than about 2.5°.